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Cell Phone Internet Access, Online Sexual Solicitation, Partner Seeking, and Sexual Risk Behavior among Adolescents

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Abstract

Online partner seeking is associated with sexual risk behavior among young adults (specifically men who have sex with men), but this association has yet to be explored among a probability sample of adolescents. Moreover, cell phone internet access and sexual risk taking online and offline have not been explored. A probability sample (N = 1,831) of Los Angeles Unified School District high school students was collected in 2011. Logistic regression models assessed relationships between specific sexual risk behaviors (online sexual solicitation, seeking partners online, sex with internet-met partners, condom use) and frequency of internet use, internet access points, and demographics. Students with cell phone internet access were more likely to report being solicited online for sex, being sexually active, and having sex with an internet-met partner. Bisexual-identifying students reported higher rates of being approached online for sex, being sexually active, and not using condoms at last sex. Gay, lesbian, and questioning (GLQ) students were more likely to report online partner seeking and unprotected sex at last sex with an internet-met partner. Additionally, having sex with an internet-met partner was associated with being male, online sexual solicitation, and online partner seeking. Internet- and school-based sexual health programs should incorporate safety messages regarding online sexual solicitation, seeking sex partners online, and engaging in safer sex practices with all partners. Programs must target adolescents of all sexual identities, as adolescents may not yet be “out,” and bisexual and GLQ adolescents are more likely to engage in risky sex behaviors.

Keywords

adolescents; sexual risk behavior; internet; cell phone; online partner seeking; online sexual solicitation

INTRODUCTION

Since the 1990s, there has been a growing concern about the health implications of internet use among adolescents (Harvey, Brown, Crawford, Macfarlane, & McPherson, 2007;

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Mitchell, Finkelhor, & Wolak, 2007a; Mitchell & Ybarra, 2007; Subrahmanyam & Greenfield, 2008; Suzuki & Calzo, 2004; Wells & Mitchell, 2008). Of particular concern has been adolescent online sexual solicitation (Mitchell et al., 2007a; Mitchell, Wolak, & Finkelhor, 2007c; Ybarra & Mitchell, 2008) and adolescents themselves looking for sex partners online (Pascoe, 2011; Rietmeijer, Bull, McFarlane, Patnaik, & Douglas, 2003). There are a limited number of studies conducted with youth (mostly 18 to 24 year olds) connecting these online behaviors with physical sexual risk-taking behaviors (Daneback, Månsson, & Ross, 2007; McFarlane, Bull, & Rietmeijer, 2002; Rietmeijer et al., 2003). Most of this research has been conducted with young men who have sex with men (YMSM) (Bauermeister, Leslie-Santana, Johns, Pingel, & Eisenberg, 2011; Benotsch, Kalichman, & Cage, 2002; Bolding, Davis, Hart, Sherr, & Elford, 2007; Garofalo, Herrick, Mustanski, & Donenberg, 2007; Horvath, Rosser, & Remafedi, 2008; McKirnan, Houston, & Tolou-Shams, 2007); one such study was among homeless youth (Young & Rice, 2011). The findings from these samples, however, may not be generalizable to adolescents 18 years and younger, who are not YMSM or who are housed. Compounding this is the emerging reality that with the widespread adoption of smartphone technology among adolescents (Lenhart, 2012; Luna, 2011), there is increased opportunity for unsupervised internet access, which may facilitate online sexual solicitation (i.e., being approached online for sex), partner seeking, and sexual risk taking with partners met online. Using a probability sample of high school students in Los Angeles, CA, the goals of this study were two-fold: (1) to examine the associations between online sexual solicitation, online partner seeking, and sexual risk behaviors and (2) to examine whether accessing the internet on cell phones (e.g., smartphones) was associated with this set of behaviors.

Ninety-five percent of adolescents in the United States use the internet, with almost half reporting they use the internet several times per day (Lenhart et al., 2011). Additionally, 75% of adolescents have their own cell phone. Older adolescents exhibit greater cell phone ownership than younger adolescents, with 83% of 17-year-olds compared to 58% of 12-year-olds reporting having a cell phone. Moreover, 27%–37% of adolescents access the internet from their cell phones (Lenhart, Ling, Campbell, & Purcell, 2010; The Nielsen Company, 2009) and 21% of those who have a cell phone access the internet exclusively from their phone, not from a computer (Lenhart et al., 2010), allowing adolescents more private internet use.

Of risks associated with using the internet, online sexual solicitation of adolescents, especially by strangers, has been of great concern (Mitchell et al., 2007c; Wells & Mitchell, 2008; Wolak, Finkelhor, Mitchell, & Ybarra, 2008). In 2005, 18% of girls and 8% of boys ages 10–17 reported experiencing online sexual solicitation (Mitchell et al., 2007c). Male gay-identified and female adolescents are most at risk for online sexual solicitation (Wolak et al., 2008). Contrary to perceived beliefs, adolescents are typically sexually-solicited by their peers or young adults and about one-in-seven solicitations are by people the adolescent knows in-person (The Berkman Center for Internet & Society at Harvard University, 2008). Moreover, adolescents who access the internet through their phone are more than twice as likely to experience an aggressive solicitation (i.e., attempts by the solicitor to contact or meet the adolescent offline) (Mitchell, Finkelhor, & Wolak, 2007b).

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Much less is known about online partner seeking behavior by adolescents 18 years and younger or the associations such partner seeking behaviors may have with sexual risk behaviors. A Dutch study found that adolescents who spent more time communicating online were more likely to engage in moderate or high online risk behavior, including online partner seeking (Baumgartner, Sumter, Peter, & Valkenburg, 2012). Data collected in 2000 suggested very small numbers of youth aged 10 to 17 had romantic or sexual relationships with persons met online (Wolak, Mitchell, & Finkelhor, 2002). Based on ethnographic work, Pascoe (2011) suggested that online partner seeking is an activity in which most adolescents do not engage. In fact, at a Denver sexually transmitted infections (STI) clinic, only 4% of those under the age of 20 reported using the internet to find sex partners and 6% had sex with someone they met online (Rietmeijer et al., 2002). Instead, the majority of adolescents used the internet to flirt with potential sexual and romantic partners whom they first met in-person (Pascoe, 2011).

Much of the work surrounding youth populations on the risks associated with partners met online has been conducted with samples of young adults, 18- to 24-years-old (Daneback et al., 2007; McFarlane et al., 2002; Rietmeijer et al., 2003). In a large online sample of internet-using young adults, 22% had sex with someone they met online. Of those who had sex with an internet-met partner, over half had been tested for HIV, but were more likely to report a history of a STI than their peers who never had sex with someone they met online. Additionally, those with online partners had more lifetime partners and were more likely to have same-sex partners than peers with non-internet partners (McFarlane et al., 2002).

A large body of work examining the risks associated with online partner seeking among YMSM, typically aged 18 to 24 years, suggests that this is an increasingly common activity for this population (Bolding et al., 2007). Among YMSM who use the internet, 48%–60% reported having sex with someone they met online (Garofalo et al., 2007; McKirnan et al., 2007), with one study finding over half of their sample spent at least two hours per week looking for a casual sex partner online (Bauermeister et al., 2011). Sexual minority adolescents may utilize the internet as a forum for meeting sex partners as a way to hide their sexual identity from their family and friends (Bull & McFarlane, 2000). YMSM who meet their sex partners online are more likely to engage in risky behaviors like participating in sex work (Garofalo et al., 2007), having more sex partners (Garofalo et al., 2007; McFarlane et al., 2002), and having unprotected anal sex (Garofalo et al., 2007; Horvath et al., 2008). Although YMSM with online sex partners report consistent condom use with their internet-met sex partners (Garofalo et al., 2007; Horvath et al., 2008); they are less likely to have ever had an HIV test (Bolding et al., 2007; Horvath et al., 2008).

METHOD

Participants

A supplemental questionnaire was distributed in conjunction with the 2011 administration of the Centers for Disease Control and Prevention's (CDC) Youth Risk Behavior Survey (YRBS) in Los Angeles Unified School District (LAUSD) high schools. The supplemental study was approved by the LAUSD Health Education Programs, as is required by the Cooperative Agreement with the CDC, Division of Adolescent School Health. The

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University of Southern California Institutional Review Board approved the data analysis. Data were collected in 2011 and analyses were completed in 2013.

The YRBS at LAUSD was conducted in two steps. First, schools within the district were selected with a probability proportional to their student enrollment. Second, classes within schools were selected with equal probability. Per the CDC's protocol, all students in grades 9–12 were eligible, including those in special education classes or who had low English-language proficiency. Of the 2,425 LAUSD students sampled, 2,105 completed the YRBS survey (87%); of those students, 1,853 completed the supplemental questionnaire (88%), with a response rate of 76% of the overall sample (1,853 of the 2,425). Students over the age of 18 years and students who identified as transgender were removed from the analyses, yielding a final sample of 1,831 students. The demographic profile of the sample is shown in Table 1. For Table 2 and subsequent analyses, the sample was limited to the 1,725 students who reported using the internet. Data were weighted with respect to race/ethnicity to reflect the demographic distribution of students attending LAUSD.

Measures

Age, race/ethnicity, and gender were all based on self-report (see Table 1). Sexual identity was assessed with the following item: “What do you consider your sexual orientation? (Please choose the best answer for you): (1) homosexual (gay or lesbian), (2) bisexual, (3) heterosexual (straight), (4) transgender, (5) questioning/unsure.” A subsequent three category variable was created to indicate heterosexual, bisexual, and gay, lesbian, or questioning/unsure (GLQ) sexual identity. The eight transgender participants were dropped from the analyses as the transgender response option was included erroneously in the sexual identity question rather than in the gender item. The exact wording of items regarding internet use and access are reported in Table 1. For the purposes of the subsequent statistical analyses, “heavy internet use” was defined as using the internet for at least one hour per day. Questions regarding online partner seeking, being approached online for sex (i.e., online sexual solicitation), and sexual risk behaviors are described in Table 2.

Statistical Analysis

Using SAS 9.2, bivariate analyses (i.e., chi-square tests as shown in Table 3) were conducted to determine associations between heavy internet use and points of internet access with six measures: (1) being approached online for sex, (2) seeking sex partners online, (3) being sexually active, (4) engaging in unprotected sex at last sex, (5) having sex with an online partner, and (6) engaging in unprotected sex at last sex with an online partner. Six multivariable logistic regression models (Table 4) assessed associations between demographics, heavy internet use, and points of internet access with each of the measures listed above. Models 4 and 5 were restricted to those participants who reported ever having sex, and Model 6 was restricted to those who reported having had sex with an online-met sex partner. Specific model Ns varied based on the number of missing responses.

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RESULTS

As shown in Table 1, of the 1,831 high school students who completed the supplemental questionnaire, most identified as Hispanic/Latino (71.73%), with 97% of the participants younger than 18 years of age. Seven percent of the sample identified as bisexual, and 5.43% as GLQ. Students' homes were the highest-rated internet access point (80.66%) and one-third (32.95%) accessed the internet from their cell phones. Almost one-third (30.30%) of adolescents used the internet for at least one hour per day, while less than 3% reported never using the internet.

Table 2 presents sexual activity, condom use, and online sex behavior. Of those who reported using the internet (N = 1,725), less than half (40.54%) reported having ever had sex (vaginal, anal, or oral sex). Only 4.89% of participants reported having used the internet to look for sex while 16.89% reported having been approached online for sex by *someone they did not know*. Of internet-using, sexually active youth (N = 647), two-thirds (63.62%) reported using a condom at last sex. Over 15% reported having sex with someone they met online; of those (N = 98), 66.52% reported using a condom the last time they had sex with an internet-met partner.

Table 3 shows bivariate associations between sex behaviors and internet access and duration. Accessing the internet from school, work, a public library, a friend's home, and on one's cell phone were all positively associated with being approached online for sex while home internet access was negatively associated with online sexual solicitation. Accessing the internet from a youth service agency was positively associated with seeking sex partners online while accessing the internet from home was negatively associated with online sex partner seeking. Heavy internet use and accessing the internet at school, work, a friend's home, or on a cell phone were positively associated with being sexually active. Cell phone internet access was positively associated with engaging in unprotected sex at last sex. Public library and friend's home internet access points were both positively associated with engaging in sex with an internet-met partner. Access point and heavy internet use were not statistically significantly associated at the bivariate level with having had unprotected sex with an internet-met partner.

Table 4 shows results of the multivariable models. Having been approached online for sex was associated with being African American (OR: 1.63, 95% CI: 1.10–2.42, $p < .05$), bisexual (OR: 2.30, 95% CI: 1.45–3.67, $p < .001$), accessing the internet on a cell phone (OR: 2.07, 95% CI: 1.56–2.75, $p < .001$), and a participant's own online partner seeking (OR: 10.10, 95% CI: 6.11–16.69, $p < .001$). Reporting having looked online for a sex partner was associated with being male (OR: 2.65, 95% CI: 1.51–4.67, $p < .001$), identifying as GLQ (OR: 5.49, 95% CI: 2.72–11.10, $p < .001$), and reporting having been solicited for sex online (OR: 10.12, 95% CI: 6.11–16.76, $p < .001$).

Adolescents who were approached online for sex were almost three times as likely to be sexually active (OR: 2.80, 95% CI: 2.06–3.81, $p < .001$) and those who reported seeking sex partners online were nearly four times as likely to be sexually active (OR: 3.98, 95% CI: 2.11–7.48, $p < .001$). Accessing the internet on a cell phone (OR: 1.49, 95% CI: 1.18–1.88,

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$p < .001$) and engaging in heavy internet use (OR: 1.35, 95% CI: 1.07–1.72, $p < .05$) were associated with a greater likelihood of being sexually active. Sexual activity was also associated with increased age (OR: 1.65, 95% CI: 1.49–1.82, $p < .001$), male gender (OR: 1.63, 95% CI: 1.30–2.04, $p < .001$), and bisexual identification (OR: 2.62, 95% CI: 1.67–4.11, $p < .001$). Students of other racial/ethnic backgrounds (i.e., Native American/Alaskan Native, Asian, Hawaiian/Pacific Islander, and multiple races) were less likely to be sexually active (OR: 0.63, 95% CI: 0.41–0.95, $p < .05$).

Bisexual students (OR: 1.81, 95% CI: 1.02–3.20, $p < .05$) and those who had been approached for sex online (OR: 1.59, 95% CI: 1.08–2.35, $p < .05$) were more likely to have had unprotected sex at last sex. Increased age (OR: 1.17, 95% CI: 1.01–1.36, $p < .05$) was positively associated with not using a condom at last sex and being male (OR: 0.52, 95% CI: 0.38–0.77, $p < .001$) was associated with decreased likelihood of unprotected sex at last sex. Engaging in sex with an internet-met partner was associated with being male (OR: 2.33, 95% CI: 1.29–4.22, $p < .01$), having access to the internet from a cell phone (OR: 2.20, 95% CI: 1.30–3.74, $p < .01$), being approached online for sex (OR: 2.84, 95% CI: 1.69–4.77, $p < .001$), and seeking sex partners online (OR: 12.33, 95% CI: 6.24–24.36, $p < .001$). Identifying as GLQ was the only variable associated with reporting unprotected sex at last sex with an internet-met partner (OR: 11.10, 95% CI: 1.42–86.56, $p < .05$).

DISCUSSION

There were several important findings to emerge from these data. First, youth who accessed the internet on their cell phones were more likely to report having been approached online for sex, to be sexually active, and to have had sex with someone they met online, compared to youth who did not access the internet on their cell phones. It is important to recognize the correlational nature of these data. We are not suggesting that owning a smart phone causes an adolescent to be solicited for sex online. It is possible that youth who are involved in online-facilitated sexual relationships acquire smart phones to facilitate these meetings. The added privacy of having personal internet access via smartphone technology may facilitate the online and offline sexual risk taking behaviors of adolescents 18 years and younger.

Second, among high school students, being solicited for sex online and online partner seeking were both associated with sexual behaviors. Adolescents who were solicited for sex were more likely to report being sexually active, having sex with a partner met online, and having unprotected sex at last sexual encounter. Likewise, adolescents who were seeking sex partners online were more likely to report being sexually active and having sex with partners met online. To our knowledge, the present study was the first to examine online sex partner seeking among American adolescents 18 years or younger using a probability sample who were not homeless or YMSM. Not surprisingly, these data also showed that adolescents who were solicited online were also more likely to be seeking sex partners online and vice-versa. While fewer adolescents reported online partner seeking compared to online solicitation, it is important to note that these behaviors were highly correlated. Consistent with previous findings with other populations, those in the current study who looked for partners online or who were approached online for sex were more likely to

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engage in sex with an internet-met partner and associated sexual risk behaviors (Garofalo et al., 2007; Horvath et al., 2008; McFarlane et al., 2002; Rietmeijer et al., 2003).

Third, the relationship between sexual identity and internet-related sex risk was complicated. Bisexual and GLQ adolescents reported important differences in online and offline sexual risk-taking relative to heterosexual adolescents. As others have noted among adult populations (McFarlane et al., 2002; Rietmeijer et al., 2003), GLQ adolescents were more likely to report using the internet to look for partners and bisexual adolescents were more likely to report being approached for sex online relative to their heterosexual peers. Most studies of online sex partner seeking behaviors among lesbian, gay, bisexual, and questioning (LGBQ) youth, however, have not included heterosexual youth within the same population and the capacity to make such comparisons was a contribution of this study. Research indicates that LGBQ adolescents may use the internet to locate potential sexual and romantic partners, largely to avoid the homophobia, stigma, and peer rejection that may result from attempting to seek partners in person (Kanuga & Rosenfeld, 2004; Pascoe, 2011). Contrary to McFarlane et al.'s (2002) finding that persons with internet-met partners were more likely to have same-sex partners, LGBQ youth were not significantly more likely to report sex with a partner met online. It is important to note, however, that GLQ youth were more likely to report having sex without a condom at their last sexual encounter with an internet-met partner relative to heterosexual adolescents.

The adolescents from Los Angeles who we surveyed were comparable to adolescents nationally. Thirty-three percent of our sample reported using a smartphone, while 31% of adolescents nationally have a smartphone. However, almost half of adolescents nationally report accessing the internet on their cell phones in the past month (Lenhart, 2012). Nationally, significantly more adolescents have ever had sex (47%), although there were no significant differences in reported condom use at last sex (Centers for Disease Control and Prevention, 2011). Unlike Baumgartner et al. (2012), heavy internet use was not significantly associated with internet sexual risk behaviors; however, using the internet for over an hour per day was significantly associated with being sexually active.

Limitations

A strength of this study was its use of a probability sample of adolescents from a large, urban school district. Despite this strong methodology, the study had some limitations. First, readers must be cautious in generalizing results beyond southern California urban school settings. Second, study data were gathered by self-report and may underestimate the true prevalence of online sex seeking, sexual solicitation, and sexual risk behavior due to a social desirability bias. It is also possible that participants may have over-reported risk behaviors to appeal to perceived peer norms. However, the questionnaires were self-administered and anonymous, which aims to reduce these biases. Additionally, we did not inquire about the proportion of time spent accessing the internet on each device. Third, there was not a differentiation between anal, oral, or vaginal sex and condom use. It is important to note that while HIV risk is relatively low during oral sex, the LAUSD sexual health education programs explicitly encourage condom use during oral sex. These programming decisions, and hence the survey item wording, were driven by the transmissibility of gonorrhea and

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chlamydia (the two most common sexually transmitted infections among adolescents) via oral, anal, and vaginal intercourse. Fourth, online sexual solicitation by someone the participant knows was not assessed, yielding a call for future investigation as The Berkman Center for Internet and Society (2008) found that one-in-seven adolescents are approached by in-person contacts. Lastly, as with all cross-sectional studies, the results represent associations and not causations.

Implications

It seems reasonable to suggest that sub-set of contemporary adolescents have begun to explore sex and sexuality in largely digital ways. In prior work with these same data, we found that adolescents who were sexually active were also more likely to be involved in sexting (the sending and receiving of sexually explicit text and images via cell phone). Taken together with the findings of the present study, it is possible that many of the respondents who were sexting are also engaged in online partner seeking and sex with online partners. Further research should be done to assess the extent to which these digital forms of sexual expression and sexual partner seeking are cohering into a new digital sexual landscape and to what extent this digital sexuality also involves risk of sexually transmitted infections and teen pregnancy.

The present results imply that the internet and cell phone technologies are merging into a single digital medium that fits into an adolescent's pocket. Interventionists should be aware of the risks of cell phone internet access and seek to develop strategies to mitigate the negative health outcomes that may result from internet sex partner seeking and sexual solicitation. Parental monitoring and controls are widely recommended; about one-third of parents use parental controls on their adolescents' cell phones and over half use parental controls for internet access and content (Lenhart et al., 2011). However, these strategies may not be sufficient. Mitchell et al. (2001) found no significant association between these parenting methods and their adolescents' online sexual solicitation risks. Thus, new, adolescent-targeted strategies should be explored in order to reduce sexual health risks stemming from internet and cell phone sexual solicitation and partner seeking.

As the great majority of adolescents use the internet, internet-based sexual health programs, especially ones optimized for smartphones, should be further implemented and evaluated. Moreover, school-based sexual health education programs should address the internet and cell phones as additional venues for meeting sex partners, with emphasis on practicing safer sex with all partners, regardless of where they are met. Interventions should speak to all sexualities, with the understanding that many LGBQ adolescents may not be “out” to their high school peers, or even to themselves.

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REFERENCES

Baumgartner SE, Sumter SR, Peter J, Valkenburg PM. Identifying teens at risk: Developmental pathways of online and offline sexual risk behavior. Pediatrics. 2012; 130(6):e1489–1496. [PubMed: 23129073]

Bauermeister JA, Leslie-Santana M, Johns MM, Pingel E, Eisenberg A. Mr. Right and Mr. Right Now: Romantic and casual partner-seeking online among young men who have sex with men. AIDS and Behavior. 2011; 15:261–272. [PubMed: 20953689]

Benotsch EG, Kalichman S, Cage M. Men who have met sex partners via the Internet: Prevalence, predictors, and implications for HIV prevention. Archives of Sexual Behavior. 2002; 31:177–183. [PubMed: 11974643]

Bolding G, Davis M, Hart G, Sherr L, Elford J. Where young MSM meet their first sexual partner: The role of the Internet. AIDS and Behavior. 2007; 11:522–526. [PubMed: 17347876]

Bull SS, McFarlane M. Soliciting sex on the Internet: What are the risks for sexually transmitted diseases and HIV? Sexually Transmitted Diseases. 2000; 27:545–550. [PubMed: 11034529]

Centers for Disease Control and Prevention. Youth online: High school YRBS: Los Angeles, CA 2011 and United States 2011 results. 2011. Retrieved from: http://nccd.cdc.gov/youthonline/App/Results.aspx?TT=G&OUT=0&SID=HS&QID=QQ&LID=LO&YID=2011&LID2=XX&YID2=2011&COL=&ROW1=&ROW2=&HT=QQ&LCT=&FS=1&FR=1&FG=1&FSL=&FRL=&FGL=&PV=&TST=True&C1=LO2011&C2=XX2011&QP=G&DP=1&VA=CI&CS=Y&SYID=&EYID=&SC=DEFAULT&SO=ASC

Daneback K, Månsson SA, Ross M. Using the Internet to find offline sex partners. CyberPsychology & Behavior. 2007; 10:100–107. [PubMed: 17305455]

Garofalo R, Herrick A, Mustanski BS, Donenberg GR. Tip of the iceberg: Young men who have sex with men, the Internet, and HIV risk. American Journal of Public Health. 2007; 97:1113–1117. [PubMed: 17463378]

Harvey KJ, Brown B, Crawford P, Macfarlane A, McPherson A. `Am I normal?' Teenagers, sexual health and the internet. Social Science & Medicine. 2007; 65:771–781. [PubMed: 17499898]

Horvath KJ, Rosser B, Remafedi G. Sexual risk taking among young internet-using men who have sex with men. American Journal of Public Health. 2008; 98:1059–1067. [PubMed: 18445804]

Kanuga M, Rosenfeld WD. Adolescent sexuality and the internet: The good, the bad, and the URL. Journal of Pediatric and Adolescent Gynecology. 2004; 17:117–124. [PubMed: 15050988]

Lenhart, A. Teens, smartphones & texting. Mar 19. 2012 Retrieved from Pew Research Center's Internet & American Life Project website: http://pewinternet.org/Reports/2012/Teens-and-smartphones.aspx

Lenhart, A.; Ling, R.; Campbell, S.; Purcell, K. Teens and mobile phones: Text messaging explodes as teens embrace it as the centerpiece of their communication strategies with friends. Apr 20. 2010 Retrieved from Pew Research Center's Internet & American Life Project website: http://pewinternet.org/Reports/2010/Teens-and-Mobile-Phones.aspx

Lenhart, A.; Madden, M.; Smith, A.; Purcell, K.; Zickuhr, K.; Rainie, L. Teens, kindness and cruelty on social network sites. Nov 9. 2011 Retrieved from Pew Research Center's Internet & American Life Project website: http://pewinternet.org/Reports/2011/Teens-and-social-media.aspx

Luna, T. Teenage dream devices: Smartphone makers see youth market as key proving ground. The Boston Globe. Jul 8. 2011 Retrieved from http://articles.boston.com/2011-07-08/business/29752313_1_smartphone-users-android-device-teens

McFarlane M, Bull SS, Rietmeijer CA. Young adults on the internet: Risk behaviors for sexually transmitted diseases and HIV. Journal of Adolescent Health. 2002; 31:11–16. [PubMed: 12090960]

McKirnan D, Houston E, Tolou-Shams M. Is the web the culprit? Cognitive escape and Internet sexual risk among gay and bisexual men. AIDS and Behavior. 2007; 11:151–160. [PubMed: 16779660]

Mitchell KJ, Finkelhor D, Wolak J. Risk factors for and impact of online sexual solicitation of youth. Journal of the American Medical Association. 2001; 285:3011–3014. [PubMed: 11410100]

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Mitchell KJ, Finkelhor D, Wolak J. Online requests for sexual pictures from youth: Risk factors and incident characteristics. Journal of Adolescent Health. 2007a; 41:196–203. [PubMed: 17659225]

Mitchell KJ, Finkelhor D, Wolak J. Youth Internet users at risk for the most serious online sexual solicitations. American Journal of Preventive Medicine. 2007b; 32:532–537. [PubMed: 17533070]

Mitchell KJ, Wolak J, Finkelhor D. Trends in youth reports of sexual solicitations, harassment and unwanted exposure to pornography on the Internet. Journal of Adolescent Health. 2007c; 40:116–126. [PubMed: 17259051]

Mitchell KJ, Ybarra ML. Online behavior of youth who engage in self-harm provides clues for preventive intervention. Preventive Medicine. 2007; 45:392–396. [PubMed: 17599399]

Pascoe C. Resource and risk: Youth sexuality and new media use. Sexuality Research and Social Policy. 2011; 8:5–17.

Rice E, Rhoades H, Winetrobe H, Sanchez M, Montoya J, Plant A, Kordic T. Sexually explicit cell phone messaging associated with sexual risk among adolescents. Pediatrics. 2012; 130(4):667–673. [PubMed: 22987882]

Rietmeijer CA, Bull SS, McFarlane M, Patnaik JL, Douglas JM Jr. Risks and benefits of the internet for populations at risk for sexually transmitted infections (STIs): Results of an STI clinic survey. Sexually Transmitted Diseases. 2003; 30:15–19. [PubMed: 12514436]

Subrahmanyam K, Greenfield P. Online communication and adolescent relationships. The Future of Children. 2008; 18:119–146. [PubMed: 21338008]

Suzuki LK, Calzo JP. The search for peer advice in cyberspace: An examination of online teen bulletin boards about health and sexuality. Journal of Applied Developmental Psychology. 2004; 25:685–698.

The Berkman Center for Internet & Society at Harvard University. Enhancing child safety & online technologies: Final report of the internet safety technical task force to the multi-state working group on social networking of State Attorneys General of the United States. 2008. Retrieved from The Berkman Center for Internet & Society at Harvard University website: http://cyber.law.harvard.edu/pubrelease/isttf

The Nielsen Company. How teens use media: A Nielsen report on the myths and realities of teen media trends. 2009. Retrieved from http://blog.nielsen.com/nielsenwire/reports/nielsen_howteensusemedia_june09.pdf

Wells M, Mitchell KJ. How do high-risk youth use the Internet? Characteristics and implications for prevention. Child Maltreatment. 2008; 13:227–234. [PubMed: 18349302]

Wolak J, Finkelhor D, Mitchell KJ, Ybarra ML. Online `predators' and their victims: Myths, realities, and implications for prevention and treatment. American Psychologist. 2008; 63:111–128. [PubMed: 18284279]

Wolak J, Mitchell KJ, Finkelhor D. Close online relationships in a national sample of adolescents. Adolescence. 2002; 37:441–455. [PubMed: 12458686]

Ybarra ML, Mitchell KJ. How risky are social networking sites? A comparison of places online where youth sexual solicitation and harassment occurs. Pediatrics. 2008; 121:e350–e357. [PubMed: 18227194]

Young SD, Rice E. Online social networking technologies, HIV knowledge, and sexual risk and testing behaviors among homeless youth. AIDS and Behavior. 2011; 15:253–260. [PubMed: 20848305]

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Table 1

Descriptive Characteristics of Los Angeles Unified School District (LAUSD) High School Students, 2011 (N = 1,831)

Demographic characteristic	Weighted %	Unweighted N
Sex		
Male	51.76	921
Female	48.24	899
Race/Ethnicity		
Native American/Alaskan Native	0.29	18
Asian	3.80	95
Black/African American	11.67	79
Hispanic/Latino	71.73	1,312
Hawaiian/Pacific Islander	2.66	35
White	8.62	101
Multiple Races	1.22	125
Sexual Orientation		
Heterosexual	87.44	1,578
Bisexual	6.93	117
Gay, Lesbian, Questioning/Unsure (GLQ)	5.43	86
Age		
12–13	0.91	18
14	26.38	498
15	32.62	581
16	21.81	389
17–18	18.28	334
How often do you use the internet?		
More than 1 hour a day	30.30	533
Everyday but less than one hour	13.79	242
Almost every day	21.89	387
A couple times a week	18.94	339
Once a week	4.13	71
Less than once a week	8.65	153
Doesn't use the internet[a]	2.30	39
Where do you go to get online? (Check all that apply.)		
At school	18.35	334
At home	80.66	1,464
Public library	11.76	207
Friend or associate's house/apartment	18.91	332
My cell phone	32.95	594
Other[b]	6.67	138

Note: All percentages are weighted with respect to race/ethnicity.

[a] A response option of “Nowhere, I never get online” was originally included in the internet point of access question, a response option for never using the internet was not provided in the frequency of internet use question.

[b] “Other” internet access locations include a youth service agency, at work, and at an internet café.

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Table 2

Sexual Risk Behaviors of Internet-Using LAUSD High School Students, 2011 (N = 1,725)

Sexual Behavior Item	%	Unweighted N
Have you ever had sexual intercourse (vaginal, anal, or oral sex)?		
Yes	40.54	647
No	59.46	1,015
The last time you had sexual intercourse, did you or your partner use a condom? (Restricted to those who were sexually active; N = 647)		
Yes	63.62	407
No	36.38	233
Have you ever searched the internet so that you could find someone to have sex with?		
Yes	4.89	81
No	95.11	1,637
Has anyone ever contacted you online that you did not know for sex?		
Yes	16.89	282
No	83.11	1,436
Participants who reported both searching the internet to find someone to have sex with and being contacted online by someone who they did not know for sex. Have you ever had sex with someone you met online? (Restricted to those who were sexually active; N = 647)	3.08	57
Yes	15.15	98
No	84.85	549
The last time you had sexual intercourse (vaginal, anal, oral) with someone you met online, did you or your partner use a condom? (Restricted to those who had sex with an internet-met partner; N = 98)		
Yes	66.52	68
No	33.48	30

Note: All percentages were weighted with respect to race/ethnicity.

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Table 3

Bivariate Analyses of Internet Access Points and Frequency of Internet Use by Online and Offline Sex Behaviors among LAUSD High School Students, 2011

	Online Sexual Solicitation			Online Partner Seeking			Sexually Active			Unprotected Sex			Sex with Online Partner			Unprotected Sex with Online Partner	
	N = 1,725			N = 1,725			N = 1,725			N = 647			N = 647			N = 98	
	Weighted %, n	χ^2		Weighted %, n	χ^2		Weighted %, n	χ^2		Weighted %, n	χ^2		Weighted %, n	χ^2		Weighted %, n	χ^2
Internet Access Point																	
Youth Service Agency																	
Yes	31.03, 535	2.42		19.45, 336	7.67	**	51.95, 896	<1		26.07, 169	<1		2.14, 14	1.08		100.00	<1
No	16.69, 288			4.75, 82			40.43, 697			36.51, 236			15.32, 99			33.37	
School																	
Yes	21.69, 374	6.44	*	5.50, 95	<1		49.16, 848	11.78	***	38.33, 248	<1		17.87, 116	1.14		29.41	<1
No	15.75, 272			4.75, 82			38.49, 664			35.79, 232			14.33, 93			35.03	
Work																	
Yes	43.06, 743	11.86	***	11.73, 202	2.45		63.20, 1090	4.97	*	31.52, 204	<1		24.80, 160	1.08		0.00	1.88
No	16.50, 285			4.79, 83			40.21, 694			36.49, 236			14.94, 97			34.75	
Home																	
Yes	15.40, 266	14.32	***	4.12, 71	11.71	***	38.45, 663	16.19	***	35.11, 227	1.86		15.18, 98	<1		32.90	<1
No	25.04, 432			9.14, 158			52.14, 899			41.65, 269			15.07, 98			35.89	
Internet Café																	
Yes	24.40, 421	2.88		5.50, 95	<1		43.53, 751	<1		37.56, 243	<1		22.59, 146	1.29		29.84	<1
No	16.56, 286			4.86, 84			40.42, 697			36.32, 235			14.81, 96			33.74	
Public Library																	
Yes	27.22, 470	17.31	***	6.02, 104	<1		40.47, 698	<1		44.46, 288	2.57		25.89, 168	8.26	**	45.99	1.87
No	15.47, 267			4.74, 82			40.55, 699			35.24, 228			13.64, 88			30.12	
Friend/Associate's Home																	
Yes	22.71, 392	9.85	**	3.60, 62	1.46		50.80, 876	17.34	***	37.51, 243	<1		20.50, 133	4.78	*	38.24	<1
No	15.45, 267			5.21, 90			38.01, 656			36.00, 233			13.39, 87			31.08	
My Cell Phone																	
Yes	22.87, 395	22.26	***	3.77, 65	2.34		47.75, 824	18.22	***	41.11, 266	4.24	*	18.43, 119	3.71		40.69	2.24
No	13.73, 237			5.48, 95			36.75, 634			33.17, 215			12.92, 84			26.46	

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	Online Sexual Solicitation		Online Partner Seeking		Sexually Active			Unprotected Sex			Sex with Online Partner		Unprotected Sex with Online Partner	
	N = 1,725		N = 1,725		N = 1,725			N = 647			N = 647		N = 98	
Frequency of Internet Use														
More than 1 hour a day	33.78, 583	4.32	32.77, 565	8.67	35.43, 611	12.61	*	39.13, 253	14.68	*	34.93, 226	1.56	42.45, 42	7.32
Everyday but less than 1 hour	13.38, 231		19.05, 329		13.78, 238			12.95, 84			10.76, 70		0.00, 0	
Almost every day	22.99, 397		12.79, 221		19.60, 338			14.84, 96			22.55, 146		20.82, 20	
A couple times a week	19.68, 339		22.26, 384		18.60, 321			19.86, 128			19.72, 128		21.60, 21	
Once a week	2.31, 40		7.48, 129		3.77, 65			1.53, 10			4.21, 27		3.45, 3	
Less than once a week	7.86, 136		5.65, 97		8.82, 152			11.69, 76			7.83, 51		11.69, 11	

* $p < .05$;

** $p < .01$,

*** $p < .001$

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Table 4

Logistic Regressions of Online Sexual Solicitation, Partner Seeking, Being Sexually Active, Unprotected Sex, Sex with Online Partner, and Unprotected Sex with Online Partner among LAUSD High School Students, 2011

	Online Sexual Solicitation		Online Partner Seeking		Sexually Active		Unprotected Sex at Last Sex		Sex with Online Partner		Unprotected Sex at Last Sex with Online Partner	
	N = 1,653		N = 1,653		N = 1,603		N = 627		N = 633		N = 96	
	O.R., 95% C. I.		O.R., 95% C. I.		O.R., 95% C. I.		O.R., 95% C. I.		O.R., 95% C. I.		O.R., 95% C. I.	
Age	1.07, 0.95–1.20		1.14, 0.93–1.40		1.65, 1.49–1.82	***	1.17, 1.01–1.36	*	1.04, 0.84–1.29		1.02, 0.68–1.54	
Male	1.22, 0.91–1.63		2.65, 1.51–4.67	***	1.63, 1.30–2.04	***	0.54, 0.38–0.77	***	2.33, 1.29–4.22		0.62, 0.20–1.93	
Race/Ethnicity (Hispanic/Latino=0)												
Black/African American	1.63, 1.10–2.42	*	0.89, 0.41–1.87		1.31, 0.92–1.89		0.99, 0.59–1.64		0.76, 0.35–1.62		1.43, 0.30–6.75	
White	1.44, 0.90–2.30		1.05, 0.45–2.42		0.96, 0.65–1.44		1.17, 0.65–2.13		1.31, 0.55–3.13		1.27, 0.24–6.80	
Other[a]	0.84, 0.49–1.45		0.94, 0.38–2.32		0.63, 0.41–0.95	*	0.97, 0.48–1.94		0.95, 0.36–2.54		0.12, 0.01–1.23	
Sexual Identity (Heterosexual=0)												
GLQ	1.48, 0.83–2.64		5.49, 2.72–11.10	***	0.78, 0.46–1.31		1.47, 0.69–3.13		1.35, 0.46–3.93		11.10, 1.42–86.56	*
Bisexual	2.30, 1.45–3.67	***	1.70, 0.69–4.20		2.62, 1.67–4.11	***	1.81, 1.02–3.20	*	1.96, 0.85–4.49		4.33, 0.95–19.69	
Access internet on cell phone	2.07, 1.56–2.75	***	0.61, 0.35–1.07		1.49, 1.18–1.88	***	1.25, 0.88–1.77		2.20, 1.30–3.74		2.14, 0.75–6.09	
Heavy internet use	1.07, 0.80–1.43		0.96, 0.56–1.63		1.35, 1.07–1.72	*	1.31, 0.92–1.85		1.05, 0.62–1.78		2.01, 0.69–5.83	
Online partner seeking (yes=1)	10.10, 6.11–16.69	***	--		3.98, 2.11–7.48	***	1.21, 0.66–2.23		12.33, 6.24–24.36	***	2.09, 0.60–7.27	
Online sexual solicitation (yes=1)	--		10.12, 6.11–16.76	***	2.80, 2.06–3.81	***	1.59, 1.08–2.35	*	2.84, 1.69–4.77	***	0.43, 0.15–1.27	
−2 Log	1497.24		633.29		1872.81		805.93		426.86		104.99	

* $p < .05$,

** $p < .01$,

*** $p < .001$

[a] The following racial/ethnic categories were collapsed for these analyses: Native American/Alaskan Native, Asian, Hawaiian/Pacific Islander, and multiple races.

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